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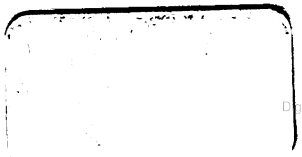
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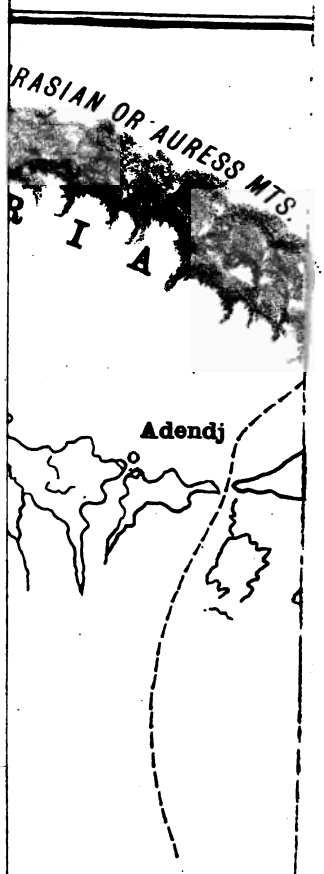

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THE CHOTTS OF TUNIS:

OR,

THE GREAT INLAND SEA OF NORTH AFRICA IN ANCIENT TIMES.

BY

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THE CHOTTS OF TUNIS.

ALONG the northern coast of Africa, from Cape Bon to the Straits of Gibraltar, run the Auress mountains, of varying height, the highest part in the Regency of Tunis being about 6,000 feet, diminishing in height through Algeria and terminating in what are called the Atlas mountains, in Morocco, with the greatest height of 12,000 feet.

South of the Auress mountains, running from west to east in Algeria, south of Biskra and east of Chegga, and extending through Tunis in a continuous line to the Gulf of Gabes on the Mediterranean, are numerous chotts, the native name for shallow saline lakes, the three principal ones called Chott Mel-rir, Chott Rhassa, and Chott Djerid, the last separated

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from the Gulf of Gabes by a narrow isthmus about twenty-five miles broad, the highest part of which being about 130 feet above the sea, called Mela, the Chott Djerid being about *sixty feet above* the Mediterranean. Chott Rhassa is separated from Chott Djerid by an isthmus called Kriz, also about 130 feet *above* the sea, the chott itself being about sixty feet *below* the Mediterannean, as also are the smaller chotts between it and Chott Mel-rir, the Chott Mel-rir being about 150 feet *below* the Mediterranean. So that if the *isthmus* of Kriz were pierced through, the Lake Djerid would be diminished in size, but the Chotts Rhassa and Mel-rir would consequently become, with the other small chotts intervening, one *vast inland sea.* It is supposed that by a gradual *upheaval* of nature was created this isthmus of Mela, thus cutting off the great flow of salt water from the Mediterranean into Lake Djerid, and so evaporation under a hot sun removed more water than the inflowing rivers supplied. The salts of the sea were left behind, and we see the condition of these lakes as described by Captain Roudaire in the fourth part of the " Revue des deux Mondes " of 1874. In

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1876 this able officer of the Engineers was instructed by the Government to ascertain the levels of these chotts as given above, and in 1880 a model of such, showing their present condition, was exhibited in the Paris Exhibition in a little court under the Ministry of Public Instruction, as made by Captain Roudaire. This model, roughly executed, was the complement to what he wrote in the "Débats" in 1874, showing how these chotts could be formed into one great inland sea, extending from near Biskra and Chegga in Algeria, through Tunis, to the Gulf of Gabes, about 300 miles in length and about 60 in breadth, forming a new gulf into the Mediterranean, with an area somewhat greater than the Irish Sea.

Travellers and writers on North Africa had noticed these chotts or inland lagoons and depressions south of the Auress and Atlas mountains, and towards the Great Sahara, many years previous to the notice of such by Captain Roudaire, and notably by Dr. Tristram, in his book entitled "The Great Sahara: wanderings south of the Atlas Mountains," published in 1860. In this book many interesting particulars

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are given about these chotts. At page 66 he observes:—"The Chott Mel-rir, though fed by so many lines of drainage, is generally dry for seven months of the year, and yet it is the lowest depression in the whole of North Africa. There is a tradition among the Bedouins that formerly it contained a much greater supply of water, and that it was habitually navigated by boats. If this be correct of even the most remote epoch of historic memory, the steady elevation of the great central plateau must have continued long after the continent assumed its present character." And at page 374:—"This basin or depression extends eastward as far as the Gulf of Gabes. The Chott El Mela (Tritonitis, marked on the map as Chott Djerid) is certainly at a greater elevation than the Mel-rir, from which it is separated by a weary waste of shifting sand-hills or dunes, and is only separated from the Mediterranean by about thirty miles of sand-hills and rocks." Dr. Tristram suggests, at page 277, "whether this depression at Chott Mel-rir, so much lower than the Mediterranean, may not have been caused by the great but gradual *elevation* of North Africa draining this ocean into the Mediterranean at

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the Gulf of Gabes. It seems probable that this gulf between Tunis and Tripoli formed the outlet, since on this coast, for a space of nearly 200 miles, there is no high land between the Mediterranean and the Sahara, merely long ranges of drifting sand-hills."

The more exact survey of Captain Roudaire more than confirms Dr. Tristram's remarks, and gives a firm foundation for his view of utilizing these lagoons by piercing the isthmus of Mela at the Gulf of Gabes, and thus in a degree reproducing the Gulf of Tritonitis, under which name it was known to the ancients, and alluded to by Herodotus in his history of North Africa, then called Libya, and by other writers subsequent to him to the time of Ptolemy. There can be little doubt but that these chotts are remains of a great inland sea; and when we examine the notices, beginning with Herodotus, we shall find beyond any doubt that this great congeries of lakes did once communicate with the Mediterranean, and formed an immense gulf, and which, in conjunction with the present Gulf of Gabes, or the Lesser Syrtis, was known under the name of the Great Lake or Bay of Triton, and that

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the separation occurred from about the commencement of the Christian era to the wars under Belisarius.

Accompanying this is a copy of the map of Captain Roudaire, which appears in a pamphlet by Mr. B. A. Irving, M.A., reproduced in this work with his kind permission, read before the Cumberland Association for the Advancement of Literature and Science, in 1880, relating to these chotts, and giving many particulars as regards their ancient and modern aspect from a geographical and geological point of view; noticing also the ruins of cities scattered throughout Tunis and Algeria of the Roman, Grecian, and perhaps even of a more remote people than they, evidencing a very advanced state of civilization, with a sketch of the Argonauts, the great puzzle of all geographers and writers of modern times.

Herodotus, writing about 460 B.C., is the earliest writer known in history on geographical details about the Lake Triton. Under the head of Melpomene, part iv., he describes it as a vast lagoon, or gulf belonging to the sea—as extending from east to west. Where it leaves the sea he fixes the country as that of the lotos-eaters.

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Then came the Machlyes, also eating the lotos. These, he says, inhabit the shore as far as the great River Triton, which empties itself into the lake, in which is the Island of Phla. He further relates how Jason and the Argonauts were driven by a tempest from Cape Matapan into the shallows of the Gulf of Triton, and the god Triton showed them the means of escape—it is obvious that this Gulf of Triton communicated with the sea,—makes mention of the Lesser Syrtis, but considers the whole of the Lesser Syrtis and the sea to the River Triton as one gulf, to which he gives the name of the Great Lake of Triton. Scylax is next credited with giving the next account of North Africa, about 250 B.C. He mentions in the Lesser Syrtis two islands, that of Brachion, and the Island of Circinna—now known as Djuba and Karkennah. Then remarks: "Towards the interior is the great Bay of Triton, which forms the extremity of the Little Syrtis and Lake Triton with the Isle of Triton, and the mouth of a river of the same name—the entrance to the lake is narrow, an island is seen at low tide, and then vessels are not able to enter—that the lake is of considerable extent and its

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shore inhabited by an African race whose chief city lies on the western coast."

Like Herodotus, we observe Scylax speaks of the Lesser Syrtis and the Lake Triton as the great Bay of Triton. We see, however, that in the interval between the time of Herodotus and that of Scylax the communication had become narrower, and not always deep enough for ships, and the two portions of the sea had received the names of the Lesser Syrtis and the Bay of Triton.

Mela Pomponius is the next writer, about 45 A.D., on North Africa. He says: "The Gulf of Syrtis is dangerous not only for its shallows but the ebb and flow of the sea. Beyond this Gulf is Lake Pallas, or the great Lake of Triton, which receives the waters of the River Triton."

In another part he remarks that at a considerable distance from the shore, towards the interior of the country, "there are barren plains, shells, oyster shells, *rounded* stones, *anchors still attached to rocks*," proving that the sea in former times extended thither. We thus see that in an interval of nearly 300 years the lake and the gulf had

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ceased to have communication with each other; and as no mention is made of the Isle of Triton, we conclude that the waters were lowered by evaporation, and the Isle of Triton as an island no longer existed.

Then we come to the time of the great and trustworthy Ptolemy Alexandrinus, the great geographer, who observes not one but several lakes, but makes no mention of any communication with the sea. He places the mouth of the River Triton on the Little Syrtis, about the place where in former times had been the entrance into the Bay of Triton. From all these accounts we see that in the time of Herodotus there is a deep gulf with a large opening into the sea, and it and the Little Syrtis are known by the name of the great Bay of Triton—at the head of this bay is the River Triton, and in it is the Island of *Phla*.

Some 300 years after his time Scylax says the Lesser Syrtis and Lake Triton are still united by a channel which is already becoming narrower, and the Island of Phla, under the name of Triton, still existing.

But in the time of Mela Pomponius, 200

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years later, the communication between the lake and the Lesser Syrtis had disappeared; and Ptolemy, about 150 A.D., says the waters had subsided and had fixed themselves in the deeper depression of the ancient bed, that the primitive basin is *sub-divided* into several lakes, and places the embouchure of the Triton at the point where was the former means of communication. Then from the traditions of the Arabs and other races dwelling on the banks of these chotts, we scarcely fail to identify in them the ancient Bay of Tritonitis. We have observed above that Captain Roudaire had taken levels from Algiers and Bona to Biskra, thence along the chotts to the Gulf of Gabes, and he reports upon the feasibility and means of again opening communication with the Mediterranean, and so reproducing a sea of about 300 miles long and about sixty to 100 miles broad, and dilates on the consequences which might result by the submersion of thé chotts upon the climate and welfare of Algeria, and in a greater degree upon that of Tunis.

Looking at the effects likely to ensue from opening up all these lagoons to the Mediterranean,

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by the Gulf of Gabes, Captain Roudaire says that M. de Lesseps and the engineers of the Suez Canal calculate that all these results may be obtained at a cost of about one and a half million sterling. The effects being a rainfall, by the creation of an inland sea, through evaporation; the hot winds blowing over this sea would carry this evaporation to the Auress mountains, when rapid condensation would take place and consequent rains, and easterly winds would act in the same way towards the west.

It is well known that before the formation of the Suez Canal and the filling of the intervening lakes, rain scarcely ever fell, but that now a marked effect has taken place in the climate, considerable quantities of rain now fall; and as the south winds blowing over these lakes create an evaporation when, laden with moisture, they meet a cold current of air from the north, causing rain, so the results would be exactly the same in Tunis and Algeria.

It is believed there is a great depression in the south-west of these chotts, leading to a still greater depression towards the Great Sahara; and it is thought that if a canal or opening be made

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where now flows the River Juby, opposite the Canary Islands, on the west coast of Africa, it would submerge the Great Sahara, which has for many years been supposed to have once been a great inland sea.

Beds of salt are known to exist in this Sahara, giving rise to the belief that this was in ancient times a vast inland sea.

If such was the case, Tunis and Algeria must have been a peninsula, hot winds unknown, and, as the Sahara must have had open communication with the Atlantic, one can understand the Argonauts entering the great inland sea, and thus finding their way into the Bay of Tunis, and so into the Mediterranean. Mr. Irving truly observes that Argo and the Argonauts have been looked upon as fanciful, but, considering the accounts of Lake Triton from the time of Herodotus to the present day, it is well within the range of fact that this old story of maritime adventure did take place. We can now understand, with such accounts as these, ranging from the time of Herodotus, 460 B.C., to the time of Ptolemy, 150 A.D., that the climate must have been very different from that at pre-

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sent existing, as we find in Herodotus, under head of Melpomene, iv., No. 191, p. 301, he describes the country west of the Lake Triton as abounding with enormous serpents, and wild beasts, as lions, ELEPHANTS, &c. &c.

It is well known that elephants are only found in regions where dense umbrageous forests and streams abound, as in many parts of India and Ceylon, and it was from the natural forests then existing, with such a climate as above alluded to, that, in the Punic Wars, and more especially in Hannibal's time, were obtained the elephants with which he encountered the Romans in Sicily and crossed the Alps. For centuries past elephants have been and now are unknown in northern Africa, and it has been a matter of speculation to many writers besides Mr. Irving where these elephants were obtained. Notice of them in Herodotus sets at rest this doubt. From the time of Ptolemy to the Saracen invasion, all communication between the Bay of Triton and Gabes must have ceased, the drying of the land under the Auress mountains must have gradually taken place, evaporation becoming less and less, and thus the sterile desert soil, save an oasis

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here and there, became the condition of these regions.

Given the conditions of these inland seas, and fertility of the soil to the west and north of the Lake Tritonitis and the River Triton, we can well understand that Carthage must have had a very fine and productive climate, producing all the cereals in abundance, as we know that Carthage was the great emporium for corn for Rome from Tunis and Algeria, with a great inland trade and that of the whole Mediterranean in her hands. We thus see that if France thus pierces the isthmus connecting the Gulf of Gabes with Lake Tritonitis (or Chott Djerid, as now called), all these chotts would become one great lake extending over 300 miles to the west, with a breadth of at least forty to 100 miles, as set forth in the survey made by Captain Roudaire, and the consequences to the climate and soil of the country both of Algeria and Tunis might be of inestimable value, and may thus account in some degree for the eagerness of the French to obtain the domination of such a country as Tunis.

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A rapid retrospect of North Africa from the earliest times to the present, may not be unacceptable to some of my readers.

According to Sallust (A.D. 31) the aboriginal inhabitants were the Getullians and Libyans, with immigrations of Medes, Persians, and Armenians. Procopius, the writer *de Bello Vandalorum*, the faithful narrator of the wars of Belisarius, says they were Canaanites and Arabs. Some time between 1500 and 1300 B.C. the Phœnicians founded numerous cities, as Utica, Hippo, Hadrumetrun, Septis, and Carthage. In the second Punic War, from 218 to 201 B.C, the Romans found Syphax and Massinissa mighty Numidian kings. The dominions of Syphax were annexed to those of Massinissa; but the powerful Numidian realm in the interior, governed by Micipsa, was a formidable rival to the Romans.

When Jugurtha, the nephew of Micipsa, deprived his nephews of their heritage, the Romans seized this opportunity of avenging the murder of Adherbal to seize Numidia. After three years' warfare, Jugurtha was carried to Rome a prisoner, and died there soon after from

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cold and starvation. His kingdom became a Roman province, but bestowed on the Moorish king Bocchus, who had betrayed Jugurtha to the Romans. This empire, founded by the Romans, became the most flourishing on earth; it comprised Tripolis, Tunis, Algeria, and Morocco; large cities were built all over the country, even in the most inaccessible mountains, such as Lambessa and Sitifis, but of which scarcely one stone remains. When the Roman Empire was partitioned under Theodosius, the Christian Roman Emperor, 394 A.D., Egypt and Cyrenica were given to the Eastern Emperors, and the other provinces became the share of the Romans. Christianity spread rapidly all over North Africa, embracing upwards of 150 bishoprics, among them the celebrated St. Augustine, the Black Bishop of Hippo (Bona), A.D. 391, and St. Cyprian, Bishop of Carthage, 246 A.D., martyred 258 A.D. In 428 A.D., Bonifacius, the Roman Pro-Consul of Africa, revolted against the Romans under Valentinian, and invited over the Vandals, who had just subjugated Spain. Genseric, the Vandal Prince, landed in Africa, 429 A.D., with 90,000 men,

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consisting of Alans and Goths, and joined by many Roman rebels. They defeated Bonifacius, and St. Augustine, the celebrated writer of the African Church, died three months before Hippo was taken, A.D. 430; and from this time may be dated the extinction of the Roman power in Africa. Eight years after this Carthage was taken by the Vandals, and the sway of the Vandals lasted for ninety-six years, during which period nearly all the Roman cities were destroyed. About 525 A.D. Justinian sent Belisarius, who rapidly subdued the Vandals and occupied Carthage, A.D. 533, when Gellimer, the last of the Vandal monarchs, fled before him. He captured the great treasure of the Vandals, viz. silver weighing many thousand talents, many valuables taken at the sack of Rome by Genseric, among them monuments of the Jews brought to Rome by Titus after the destruction of Jerusalem. Justinian, the Emperor, caused these monuments to be sent to the Christian Church at Jerusalem. Procopius tells us of the complete subjugation of the country from Carthage to the Atlantic. The ruins of Utica cover several miles in extent, showing the

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remains of a theatre, and magnificent reservoirs and buildings of masonry of great size and thickness, rent asunder into great masses. Thus passed away the Vandals, the few who survived in the mountain fastnesses originating the present Kabyles.

On the departure of Belisarius internal dissensions divided the country, till about 642–645 A.D., when a body of Arabs came over and conquered the various tribes, finally destroying Carthage, 692 A.D. From this period to 1500 A.D. various internal powerful kingdoms arose, till Spain attacked the cities on the seaboard with various successes, including the destruction of the celebrated pirate chief Barbarossa, who was killed A.D. 1517. The Turks now came to assist the Algerines, overcoming the Spaniards. Charles V. in 1541 vainly attempted to subdue them. In 1683 Louis XIV. bombarded Algiers for piracy. Under the Deys and Janissaries the North of Africa was divided into four provinces: Algiers, Constantine, Tittori, and Oran. In 1775 the Spaniards attacked the Deys with disastrous results. In 1816 Lord Exmouth bombarded Algiers, destroying the fleet and town.

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In 1830 the French landed, and gradually, by successive armies and numerous pitched battles and incessant warfare, subdued all Algeria to the mountains and the confines of the desert or Great Sahara, and still continue to hold the country, not, however, including Morocco, nor Tunis till very recently, but they evidently intend to annex that regency also.

In 1877 Colonel Playfair, British Consul at Algiers, published a highly interesting and valuable work entitled "Travels in the Footsteps of Bruce," in North Africa, undertaken to bring to the notice of the world the astonishing accuracy and truthfulness of Bruce in his drawings and manuscripts of antiquities of Greek and Roman times, which had never been published but had remained locked up in the family muniment-room at Kinnaird, and also with a view of rescuing Bruce's name from undeserved obloquy brought upon him by his travels in Abyssinia. Bruce was appointed Consul-General at Algiers in 1765. Colonel Playfair reproduces many of these sketches by Bruce, and rescues from oblivion many of the most magnificent Roman and Greek antiquities, some of which have even in

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these days ceased to be. It is worthy of remark, observes Colonel Playfair, that among a branch of the Berbers, their features, customs, and language unmistakably speak as to their classic origin. Morgan, in his history of Algeria in 1728, says the women are remarkable for their beauty, fair curling locks, and wholesome ruddy looks. Shaw, who wrote later, says their complexions are fair and ruddy, and their hair, unlike the Kabyles, of a deep yellow; and Bruce bears testimony to the same marks combined with light hair and blue eyes, to their European origin, their language full of Latin words, and customs derived from their Christian ancestry.

Several industries of increasing importance have arisen within recent years and been established. The *alfa* grass grows abundantly in the Tunisian province. Its name, the Stipa, or *Macrochloa tenacissima*, is destined in Colonel Playfair's judgment to be the great civilizing influence in North Africa. Two railways in Algeria already bring this precious fibre to the coast. Tunis cannot compare with Algeria in its abundance, but still great quantities are being exported from Susa, Sfax, &c. The plants grow

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spontaneously on the most dry and arid spots. At present it is greatly used for the construction of paper, and nearly all our British mills are being adapted to make use of it. Also hats, mats, brooms, baskets, &c. &c., are made of the dried fibre; also a paste for the manufacture of telescopes, of artificial limbs, for shoemakers, tailors, and it is even suggested for shipbuilding!"

La Calle is the nearest French town on the Tunisian sea frontier, and is the head-quarters of the coral fishery. Also a valuable and increasing trade has sprung up in the salting of sardines, bidding fair to be one of the staple industries of Algeria.

Postscript.

Since writing the above, a Commission was appointed by the French Government in 1882, comprising senators, deputies, engineers, representatives of the various ministries, M. de Lesseps, and other members of the Institute, to report on the feasibility and physical, political, and economic results of M. Roudaire's scheme of

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an inland sea in Southern Algeria and Tunis. The plan is that a canal from the Gulf of Gabes should admit the Mediterranean waters to a series of chotts or natural depressions, now dry, but formerly all lakes communicating with the sea. M. de Freycinet, in his report to the President, dismisses the notion of a climatic change perceptible even in the Sahara, as out of keeping with a surface of water which would be a mere speck in maps of North Africa; but he approves of a belt of irrigated land round the basin and canal, giving a considerable area for cultivation. He mentions the misgivings felt by some as to the sea being silted up by evaporation and saline deposits, which, however, M. de Lesseps sets aside as inconsistent with the effect of the Suez Canal on the Bitter Lakes. But M. de Freycinet deemed the project worthy of thorough investigation, and, accordingly, a conference was held by MM. de Freycinet, Lesseps, and Captain Roudaire, when it was resolved to take steps to have soundings taken to show whether it would be necessary to remove any stone existing in the belt of land between the sea and the chotts, as, if so, the idea of cutting

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the canal would be abandoned; but if it turned out to be only sand, then M. de Lesseps asserts that the enterprise could assuredly be carried out. Accordingly in March this year M. F. de Lesseps left Tunis, in company with a distinguished party of engineers and contractors, to cross the desert lying between that town and the great marsh lakes of Southern Tunis. Soundings were taken 73 metres deep, showing the existence of nothing but sand; and M. de Lesseps confidently expressed the opinion that the African inland sea could easily be made with the aid of one hundred "excavators," representing the work of 100,000 men. In the following April M. de Lesseps arrived at Biskra, a distance of at least 300 miles west in a direct line from Gabes, having inspected and made a careful survey of the country between Gabes and the marsh lakes. He declared that the soil would admit of the excavation necessary to connect the lakes with the Mediterranean, that the works presented no extraordinary difficulty, and that the concessions asked for touching the forest and adjoining lands would make the scheme remunerative and wholly independent of State aid, subvention,

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or guarantee. He calculates the proposed basin would be fifteen times as large as the Lake of Geneva. The moisture engendered by its presence would bring vast tracts of desert land into cultivation, and an approach to valuable forests, now wholly inaccessible, would be facilitated, the Company to be compensated by having conceded to it exclusive rights to the land adjoining, and the forests, in return for opening up the said chotts with the sea at Gabes. Captain Roudaire found the level of the lakes to be fourteen metres below that of the Mediterranean.

My readers will now see that this scheme, the original project of Captain Roudaire, presents no insuperable difficulties to be overcome, and the investigation made by M. de Lesseps amply confirms the fact of an inland sea, as related in the pages of Herodotus and subsequent authors, having formerly been open to ships, and without any doubt existed as such, and perhaps on a much larger scale, ages before his time. The effects of such a sea, if effected, and to the extent as shown in the above pages, would undoubtedly greatly modify the present

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climate of Tunis, and our gallant neighbours and friends would richly deserve all the incontestable advantages such a magnificent work offers to the imagination. But the great question remains to be solved: Is it that this vast inland lake and its approach to the sea have been blotted out as such—a sea once upwards of 300 miles long, by from 60 to 100 miles wide, by the gradual upheaval of the Great Sahara and the adjacent country? Only by such an upheaval can such a natural phenomenon have occurred, and it remains a matter for serious consideration whether such upheaval may not be at this day in progress. If so, man may and can triumph over the greatest physical difficulties, but he cannot resist the inscrutable operations of Nature.

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